



Winter 2016

## Aerocom: Winter 2016

John D. Odegard School of Aerospace Sciences

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# AEROCOM

JOHN D. ODEGARD SCHOOL OF AEROSPACE SCIENCES

WINTER 2016

**UND**  
UNIVERSITY OF  
NORTH DAKOTA

[AERO.UND.EDU](http://AERO.UND.EDU)

# A MESSAGE FROM THE DEAN



As my career draws to a close, I can't help but look back and recall about how it all started – attending UND, winding my way through 30 years in the aerospace industry, and ending up back here at UND. It can best be described as an amazing journey.

The odyssey started in the U.S. Air Force flying T-37s and T-38s in Air Training Command. This led to research positions designing aircrew training systems for every branch of the military and NASA's space shuttle program. Most of my career was spent chasing government contracts. Our friends told us they would write our address in their address books in pencil because we moved so much. I worked on a lot of interesting projects in some exciting places, even the secretive "Area 51."

Then fate brought me back to the place where it all started, the University of North Dakota. Ironically, if I hadn't attended UND, I never would have known about its Aerospace College and never had any reason to seek the dean's position. I was very fortunate. It is the greatest job in the aerospace industry and a position that has only been open once in the past 48 years.

Two things lured me back: the prestige of the Odegard School and fond memories of my college days at UND - football, Frenchy's and the Red Pepper. The Red Pepper is still here, Frenchy's is gone, and the fond memories have been replaced by new and more rewarding memories. The past 16 years have been marked by great events and great advancements within the Odegard School.

As I enter a new phase in my life, I will look back on these years with pride about the accomplishments. I won't miss some of the politics, but I will miss the people. This has been the best time of my life. What a way to finish my career on such a high note. It has been an honor and privilege to serve as the dean of the John D. Odegard School of Aerospace Sciences. Thank you.

Sincerely,

**Bruce A. Smith** | Dean, John D. Odegard School of Aerospace Sciences

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*"The balloon could carry no live critters, but it could carry plants, such as the experiment built by the students from Kindred."*

– Marissa Saad, **page 15**

### AEROCOM

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Full article on page 14 | Cover Photo Credit **Juan Miguel Pedraza**



# STRAIGHT TO THE TOP

*UND celebrates  
emplacement  
of highest  
construction beam  
atop Robin Hall*



Pictured from left to right; Governor Dalrymple, President Kelley, Mary Bazar, Bruce Smith, John Hoeven, Si Robin and Larry Martin.

A pinnacle of success is rising on the western fringe of the University of North Dakota campus in more ways than one.

Last fall, the UND Aerospace Foundation, along with donors and state and local officials, celebrated the emplacement of the highest construction beam atop its newest building project: Robin Hall – scheduled to house UND’s successful and growing unmanned aircraft systems (UAS) enterprise.

Speakers for the event included husband-and-wife team Si Robin and Mary E. Bazar, the lead benefactors for the project; North Dakota Gov. Jack Dalrymple; and Bruce Smith, dean of the John D. Odegard School of Aerospace Sciences, which oversees UND’s UAS programs.

It has been about one year since the Aerospace Foundation broke ground on Robin Hall, a much-needed UAS/aerospace research facility that will go a long way in serving the school’s rapidly growing UAS program as well as other aerospace-related research activities. Architectural renderings of the building call for a highly prominent structure with a central glass tower. The framework of the tower is easily visible as one approaches the building site, adjacent to the existing Ryan Hall, on the corner of North 42nd Street and University Avenue.

Bazar and Robin are president and vice president, respectively, of Sensor Systems, a California-based manufacturer of aerospace antenna. Longtime UND Aerospace champion and benefactor James Ray is also a donor on the Robin Hall project. ICON Architects of Grand Forks is the architectural firm involved in the project.

UND’s Center of Excellence for Unmanned Aircraft Systems, which will be a major tenant of the new research building, was the first collegiate degree program of its kind in the nation and is quickly becoming the largest and most widely recognized program in the world.

The 71,161-square-foot Robin Hall is being funded largely by private donations and \$1.5 million in matches from the North Dakota State Board of Higher Education Challenge Fund. The state authorized UND to spend up to \$25 million on the project.

—David Dodds



## AEROSPACE DEAN SEARCH

*Dr. Joshua Wynne, chair, search committee*

It's not a done deal—but there's definite progress toward filling the job of dean of the John D. Odegard School of Aerospace Sciences. Bruce Smith, the current dean, announced last year that he will be retiring at the end of June, 2016.

According to search committee chair Joshua Wynne, MD, MBA, MPH, vice president for Health Affairs and dean, UND College of Medicine & Health Sciences, the group achieved a major milestone in the process by painstakingly creating a detailed position description.

"We completed and approved a broad description for the position," said Wynne. "It took longer than anticipated because we needed to fully understand the relationship between the Odegard School and the UNDAF Aerospace Foundation (UNDAF). The position description has now been accepted by both the search committee and the school, and it has been found to be consistent with the understanding of the UNDAF board of trustees, so we're moving forward with that."

In parallel with the position description process, the Odegard School, the provost, and UNDAF have been working together to create an agreement that outlines the various relationships between the two organizations and the role of the dean in each. "We anticipate that will be completed by the end of February so that when candidates arrive over the next couple of months, they and the organization will have a clear idea of exactly what the dean is expected to do," Wynne

said. "That means we're now moving forward with the actual search process."

To facilitate its work, the committee hired the search firm of Summit Search Solutions. That company will use the finalized position description to begin soliciting candidates very soon.

"We anticipate we'll have fully vetted candidates on site for interviews before the end of winter; by March we'll begin winnowing down the pool of candidates," Wynne said. "Then subsequent to that we'll present a list of candidates to the provost. Our goal remains to have the new dean in place by July 1, 2016. We are working hard to achieve that outcome."

The position description specifies that this is an academic position but the committee isn't limiting candidates to people with a purely academic background. "We feel that people from industry will be candidates, as will people with a military background," Wynne said, noting that Smith came to the Aerospace dean position with both academic and commercial aviation experience.

"We're not simply a flight school. Our students don't just get a commercial aviation rating, they come away with a college degree," Wynne said. "The key factor we're looking for in the new dean is effective leadership, and that's true whether we're talking the dean of Arts and Sciences, the dean of Engineering, or the dean of Aerospace."

— *Juan Miguel Pedraza*



## FLYING GENERATIONS:

*UND flight instructor takes great-grandma up*



At age 100, Emily Crocker found just the right person to take her on an airplane ride.

The active centenarian turned to her great granddaughter, Alexis (Lexi) Mattfeld, a UND student and certified flight instructor with instrument rating.

“Yes, she was thrilled, especially when we flew over her rural Minnesota farm,” said Lexi, a Hawley, Minn., native who’s flown just about everyone in her immediate family. “In the plane with me the day I took my great-grandmother up were also her son, my great-uncle Jim, and her daughter, my great-aunt Jeanine. Emily is very active – she was riding snowmobiles until her late 90s.”



Lexi, who’s been a UND CFI-I since August, is working on her degree in Commercial Aviation. She’s looking forward to a career either in corporate aviation or as a bush pilot, possibly working for a mission program.

— *Juan Miguel Pedraza*



## PILOTS WIN TOP-SCORING INDIVIDUAL MALE AND FEMALE RANKINGS



The UND Flying Team won the top spot by a commanding lead in the 2015 Region V SAFECON competition held late last year in Madison, Wis. The team won the overall competition with a total score of 863 points, 328 points ahead of the second-ranked team.

UND pilot Justin Bauer nailed the No. 1 spot as “Top Pilot,” with five other UND pilots placing in the top 10; Bauer was also the Top Scoring Male Contestant and the Top Scoring Contestant, with several other UND students placing in the top 10 in both of those categories. In the Top Scoring Female Contestant category, UND pilot Dana Atkins took the No. 1 spot. UND was also awarded the Judges Trophy.

This year’s UND Flying Team comprises the following students, in alphabetical order (name, home town, major):

**Dana Atkins**, Sycamore, Ill., Aviation Management

**Justin Bauer**, Sussex, Wis., Commercial Aviation

**Alex Browne**, Nazareth, Penn., Aviation Management

**Glenn Dodd**, Eden Prairie, Minn., Aviation graduate student

**Ben Eidem**, Ossining, N.Y., Air Traffic Control

**Steven Kinney**, Minneapolis, Minn., Commercial Aviation and Aviation Management

**Tim Nicasia**, Federal Way, Wash., Commercial Aviation

**Cooper Pallasch**, Tiverton, R.I., Commercial Aviation

**Mitchell Ruger**, DeForest, Wis., Airport Management and Air Traffic Control

**Justin Therriault**, North Pole, Alaska, Commercial Aviation

**Austin Waite**, Bainbridge Island, Wash., Commercial Aviation

Official results can be reviewed at: [nifa.aero/schools/competition-archives](http://nifa.aero/schools/competition-archives).

— *Juan Miguel Pedraza*

## DOUBLE THE EFFECT



The UND Aerospace Foundation is providing a 1:1 match for contributions up to \$10,000 designated toward the Air Race Classic Team now through June 30, 2016.



**MAKE YOUR GIFT  
ONLINE TODAY AT**

[UNDalumni.org/AirRaceTeam](http://UNDalumni.org/AirRaceTeam)

### FOR MORE INFORMATION

Josh Christianson: 701.777.4637 or [joshc@aero.UND.edu](mailto:joshc@aero.UND.edu)



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# HONORING THE FOUNDER

*UND Aerospace founder  
and first dean John D.  
Odegard receives posthumous  
Rough Rider Award*

North Dakota Gov. Jack Dalrymple has named John D. Odegard the 42nd recipient of the state's Theodore Roosevelt Rough Rider Award, North Dakota's highest commendation for its citizens. The award was presented to Odegard's family during an event in Grand Forks on October 15th of last year. Odegard passed away in 1998.

"John D. Odegard was an extraordinary leader, entrepreneur, pilot and educational administrator who took two donated aircraft and a small office in UND's Business College and built an aviation program that has grown into the largest and the best in the world," said Dalrymple.

Throughout his 32-year career as an aerospace educator, Odegard's reputation for leadership earned him industry acclaim and numerous recognitions. His visionary approach helped initiate the Airway Science Network, a joint effort between UND Aerospace and the FAA to broadcast aviation classes via satellite to college campuses across the country. In 1986, he captured worldwide industry attention for leading the development of the SPECTRUM® ab initio airline



Pictured from left to right; Governor Dalrymple, Diane Odegard, Stephanie LaDue and John D. Odegard Jr.

pilot training program, a program that emerged as an industry standard for commercial pilot training around the globe.

Odegard, a Minot native and UND alum, was honored, among many other distinctions and awards, with the FAA's Excellence in Aviation Award and the Distinguished Service Award for his many achievements in aerospace education and aviation safety. He was also named North Dakota Business Innovator of the Year and was inducted into the North Dakota Entrepreneur Hall of Fame, the North Dakota Aviation Hall of Fame and the Norsk Hostfest Scandinavian-American Hall of Fame.

Odegard joined the UND faculty in 1966. His proposal to merge a business degree with a flight program gave birth to UND's aviation program and Odegard was named assistant professor and chairman of the new Department of Aviation in 1968. In 1982, the department was re-organized to become the Center for Aerospace Sciences, with Odegard as director, and in 1984, the center was granted full status as a college and he was named dean.

Throughout his career, Odegard logged more than 14,000 flight hours and held an airline transport pilot certificate, with type ratings for the Learjet, Beechjet 400 and Cessna Citation I/II aircraft. He was a certified flight instructor for airplanes, instrument, multi-engine and gliders. He was also an FAA pilot examiner for private, commercial, instrument, multi-engine, flight instructor, ATP, glider, and seaplane certificates and ratings.

Today, true to Odegard's legacy, the college is one of the world's most widely respected civilian aerospace education programs, and is a leader in research and scholarly activity in aviation and aviation safety, atmospheric sciences, computer science, space studies, and Earth system research.

"John's memory is still very much alive here at UND," said Bruce Smith, dean of the John D. Odegard School of Aerospace Sciences. "His legacy as a leader and a consummate pilot continues to make a lasting impression on all of us."

— Juan Miguel Pedraza

# UAS CENTER OF EXCELLENCE CREATES NEW, MORE EFFICIENT TRAINING CURRICULUM

*UND cooperative agreement with U.S. Air Force Research Lab produces excellent results*



Neil Nowatzki

If you're looking for the best in unmanned aircraft systems (UAS) training, look no farther than the UND Aerospace Center for Unmanned Aircraft Systems Research, Education and Training. The Center last year hit several training milestones that boosted its standing among organizations such as the U.S. Air Force and the Department of Homeland Security as a premier training and education facility.

Research and development efforts between UND and the U.S. Air Force Research Laboratory (AFRL) have progressed through the "Science and Technology for Warfighter Training and Aiding" Cooperative Agreement. This effort produced a state-of-the-art curriculum for UAS pilots and sensor operators and established infrastructure for future research efforts.

"We developed a training curriculum along with a number of teaching tools for the non-weaponized General Atomics MQ-9 Predator B," said John Bridewell, professor in the UND

UAS program and the UND principal investigator on the project. "The goal was to make a shorter, less expensive but more effective curriculum to train UAS pilots and sensor operators. We ran three successful classes and conducted a series of workshops with AFRL, Aptima, and the Group for Organizational Effectiveness to establish the mission essential competencies for medium-altitude long-endurance (MALE) unmanned aircraft systems."

## **PREDATOR RESEARCH INTEGRATED NETWORKED COMPUTER ENVIRONMENT (PRINCE)**

UND's training and research efforts included the use of a PRINCE simulator, a high fidelity, nonproprietary, open architecture, and networkable MQ-1 Predator sim, originally developed by AFRL. This updated version of the PRINCE was built entirely at UND Aerospace under the leadership of Andrew Kuelbs, a UND Aerospace network analyst.

Last year, UND conducted over 100 hours of competency-based training in the PRINCE, indicating that it provides an effective training environment for the majority of MQ-1 aircrew tasks, with some limitations. Adapted for civil use, the PRINCE has been used to validate UND's MALE UAS curriculum.

## **PREDATOR MISSION AIRCREW TRAINING SYSTEM (PMATS)**

In January of 2011, the UND/L-3 UAS Training Center at the Grand Forks Air Force Base became the first non-military entity to operate a Predator Mission Aircrew Training System (PMATS). This highly sophisticated simulator, a step up from the PRINCE, accurately reproduces MQ-1 Predator and MQ-9 Reaper pilot and sensor operator aircrew stations, allowing students to master the art of flying and operating a Predator-series UAS.

— Juan Miguel Pedraza





George Walsh

# PHOENIX FLIGHT TRAINING CENTER 20TH ANNIVERSARY

Call it a stunning success because that's what it is.

The UND Aerospace Foundation's (UNDAF's) Phoenix Flight Training Center, celebrating its 20th year of operation, has logged phenomenal growth.

"We've been located at the Chandler-Gilbert Community College (CGCC) Flight Training Center in Mesa, Ariz., since 1995, starting with a couple of aircraft, two instructors, and a manager," said Don Dubuque, UND Aerospace Director of Extension Programs and a 35+ year veteran of UND Aerospace. "And we've been growing since Day 1." The program now enrolls 90 undergraduate students and about 80 contract students, with a total capacity for about 120 undergrads and 100 contract students.

Earlier this year, UNDAF and CGCC celebrated the grand opening of a \$4 million, 2,000-square-foot facility on the flight line at the Phoenix-Mesa Gateway Airport. The facility includes a 15,000-square-foot hangar and 10,000 square feet of office space that includes a state-of-the-art flight simulator.

"Thanks to the generosity of James Ray—a prime benefactor of UND Aerospace—this new facility helps us a lot with our Phoenix program expansion," said Dubuque, who is also the fleet manager for UND Aerospace. "We now have our own maintenance space, classrooms and flight training devices in that separate building." Some of the hangar space is leased to Aviation Performance Solutions and Lockheed Martin.

"This facility shows the commitment UND Aerospace and CGCC have to be leaders in aviation education," Dubuque said. At the Phoenix Flight Training Center, UND now has 35 flight instructors flying 18 Cessna 172s, three Piper Seminoles, a Piper Arrow and a Beechcraft King Air, plus one single-engine and one multi-engine flight training device. They also employ four full-time and two part-time mechanics and six support staff, including an office manager, dispatchers, and student service professionals. The facility is managed by UND Aviation alum Rex Ginder.

"How we started there kind of reminds me how John (Odegard) started the UND Aerospace program 47 years ago—with two airplanes and a couple of flight instructors," said Dubuque. The Phoenix Flight Training Center continues to be unique in that it's a feeder program into UND Aerospace—students there complete two years with an associate degree and then come to Grand Forks to finish out two years for their bachelor's degree.

UNDAF partnered with CGCC in 1994 to provide a collegiate flight training program to meet the growing demands in the world-wide aviation industry in career fields such as professional flight, air traffic control, airport management, and aviation management.

—*Juan Miguel Pedraza*



## AEROSPACE SIGNS ORDER WITH PIPER FOR UP TO 100 NEW AIRCRAFT



Archer rendering courtesy of Piper Aircraft, Inc.

The John D. Odegard School of Aerospace Sciences has entered into a multi-year contract with Vero Beach, Fla.-based Piper Aircraft, Inc., to supply UND with a new fleet of training aircraft. The deal could be worth up to \$40 million.

The deal would be for about 80 Archer single-engine airplanes with Garmin all-glass cockpits to replace the school's current Cessna 172 as the basic trainer.

Piper will also deliver about 20 Seminole twin-engine airplanes with Garmin all-glass cockpits, replacing the current fleet of Seminoles.

UND's aircraft training fleet replacement will take place over the next five to eight years, according to UND Aerospace Director of Extension Programs Don Dubuque.

— *Juan Miguel Pedraza*

## MULTIPLY YOUR GIFTS TO THE UNIVERSITY OF NORTH DAKOTA

through the North Dakota Higher Education Challenge Fund

From July 1, 2015 through December 31, 2016, the State of North Dakota will match **\$1 for every \$2** given by private donors to the University of North Dakota Foundation on gifts of at least \$50,000. Qualified gifts must be used to fund endowments supporting scholarships or faculty positions.

**\$7 million** has been allocated to the University of North Dakota: the first \$2 million must be used for scholarships; when that has been fulfilled, the remaining \$5 million may be used for scholarships or faculty support.



## NEWBY-FORTE AVIATION SCHOLARSHIP ENDOWMENT

Jill Newby-Forte, '83 and Steve Forte of Manhattan Beach, Calif. have established the Newby-Forte Aviation Scholarship Endowment for aviation student scholarships at the University of North Dakota. The annual allocations will provide one or more scholarships to female students majoring in aviation and enrolled full-time within the John D. Odegard School of Aerospace Sciences at the University of North Dakota beginning in 2017.

Jill and Steve capitalized on the current incentive from the North Dakota Legislature that provides funding to match every \$2 they gave with an additional \$1 from the State on eligible gifts. With a gift of \$50,000, the Fortes were able to establish an endowed scholarship worth \$75,000 through the Higher Education Challenge Fund.

From July 1, 2015 through December 31, 2016, the state will match \$1 for every \$2 raised on gifts over \$50,000 to endowments supporting student scholarships and faculty academic positions. To learn more about the North Dakota Higher Education Challenge Fund or opportunities for you to support the John D. Odegard School of Aerospace Sciences, contact Josh Christianson, Director of Development and Alumni Relations:



### JOSH CHRISTIANSON

Director of Development &  
Alumni Relations

joshc@aero.UND.edu or  
701.777.4637

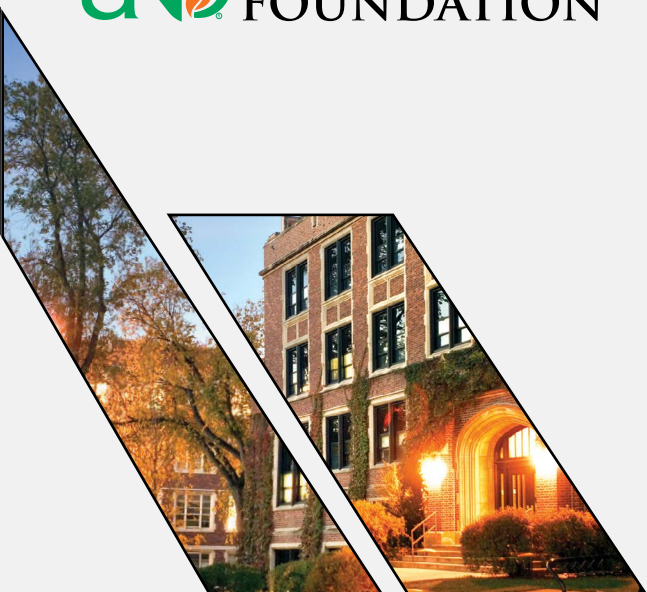


**The State of North Dakota will pay for 1/3 of your endowment for scholarships or faculty support at the University of North Dakota.**

For example:

Minimum commitment by donor	<b>\$50,000*</b>
N.D. Match (\$1 for every \$2 given)	<b>\$25,000</b>
<b>Total value of your new named endowment for scholarship or faculty support at UND</b>	<b>\$75,000</b>

*\*Your gift may be achieved through a pledge, or payment over time.*



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[undfoundation.org/NDChallenge](http://undfoundation.org/NDChallenge)



# FLYING HIGH FOR SCIENCE EDUCATION

*UND Aerospace nurtures youth interest in science, technology, engineering, and math*

Huddled together on an open field on a crisp Saturday morning, a group of Kindred, N.D. high school students prepares to attach a small pink box to a balloon.

They are one of several teams of middle and high school students and their teachers hosted by the UND-based North Dakota Space Grant Consortium for a science project. Today, they're launching a weather balloon and its train of payloads containing several experiments designed and built by the students.

The Space Grant Consortium, housed at UND Aerospace's Department of Space Studies, is part of a federally funded national program that aims to get students interested in pursuing careers in science, technology, engineering, and mathematics—the so-called STEM specialties.

“We heard about this from Space Grant deputy director Caitlin Nolby—a UND Space Studies alum—a couple of years ago at a North Dakota math teacher conference,” said Kindred High School math teacher and UND alum Paul Kvislen. “The students were really enthusiastic about this opportunity and did their first launch in 2014, and the same team was back last fall. They weren't sure about all the ins and outs the first time around, but they were eager to keep going.”

The Kindred team prepared an experiment to test the protective effectiveness of various types of insulation in extreme temperature environments aloft. “It was part of a national research effort to get ready for Mars,” said Kvislen, whose degrees are in teaching and mathematics. “We know that we'll have to grow our own food on the Red Planet, so these students used several different plants with different kinds of insulation to see which best protects the plants.”

Kvislen says such hands-on experimentation is vital to grabbing and holding his students' attention. “This is about putting the things that they learn in the classroom into work in a real-life situation. It's about helping them think through problems and challenges,” Kvislen said. “For example, when they put together



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UND Space Studies graduate students perform a last-minute safety check on the payload attachment to the balloon as it fills with helium.

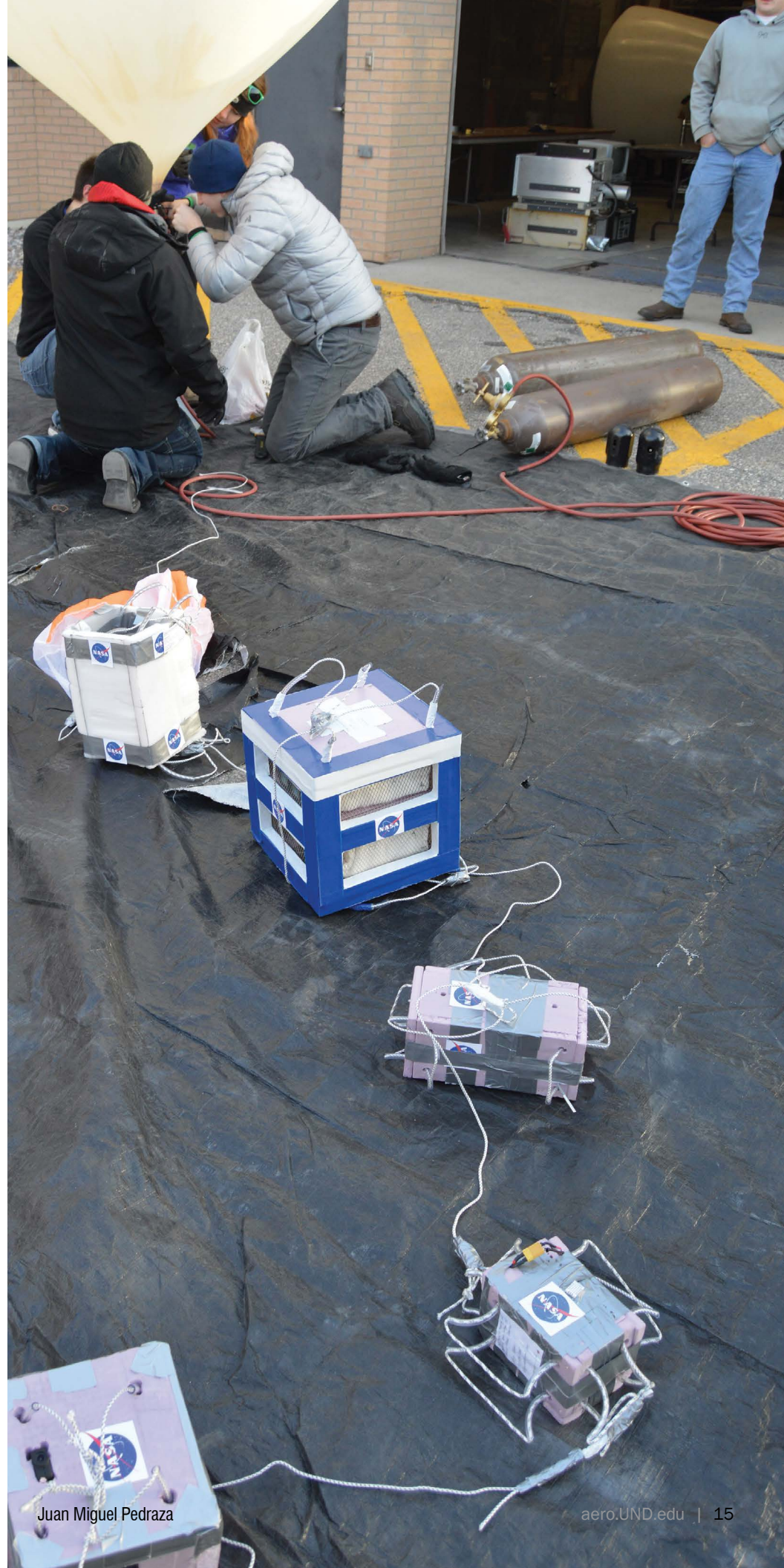
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their first payload, it was too heavy. So they had to analyze what caused it to be overweight. They'd used duct tape to hold parts of it together. They re-did it using fishing line and saved a lot of weight that way."

Marissa Saad, one of the Space Grant coordinators who helped to organize and manage the balloon launch, explained that the balloon's total gross payload, including its attaching wire and parachute, has to be less than 12 pounds. It carried aloft four student-built payloads plus one designed by UND graduate students, a payload that carried GoPro cameras.

"The balloon could carry no live critters, but it could carry plants, such as the experiment built by the students from Kindred," said Saad, who holds a master's degree in Space Studies from UND. Also, no projectiles or anything else that might compromise the safety of people on the ground could be included. The balloon was tracked by means of a GPS unit and by teams in vehicles using two-way radios.

*...continued on next page*





The ND Space Grant Consortium fulfills NASA's Space Grant mission by involving North Dakota faculty, students, and K-12 teachers and students in multi-institution, collaborative, NASA-relevant research and higher-education projects, while also educating the North Dakota citizenry about NASA, its purpose, and its missions. "This kind of program encourages problem-solving, thinking on the run—it's all really good stuff—and that's what STEM activities like this balloon launch are all about," Kvislen said.

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Sophie Orr, UND Space Studies grad student, monitors the balloon inflation task.

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Juan Miguel Pedraza

## ADDITIONAL JOHN D. ODEGARD SCHOOL OF AEROSPACE SCIENCE STEM OUTREACH

The balloon launch is one of several youth-oriented STEM programs hosted by UND Aerospace annually. These include efforts such as the Computer Science Department's computer, robotics, and animation camps, delivered each summer at several levels from beginner to advanced.

Another vital program, fueled by the North Dakota chapter of Women in Aviation (WIA), is the free "Girls in Aviation Day" program which introduces young girls, ages 13-19, to aviation career possibilities. The UND WIA chapter joined WIA chapters worldwide for this outreach event to encourage the next generation of women in aviation. Activities included

a speaker panel of female airline, military and corporate pilots and aviation managers, UND Aerospace facility tours, and hands-on aircraft and air traffic control simulator opportunities. The North Dakota Aeronautics Commission provided a grant to help make this event possible.

UND's yearly Aerospace Camp, dubbed "A Summer Camp Like No Other" is a full week of aviation adventure. This "college seminar" is similar to attending a week of actual college. The camp's counselors, flight instructors and professors are leaders in aerospace education. What makes this camp unique is the amount of flight training each student receives. Students learn the basics of flying, experience new and exciting technology and explore career opportunities in flight, air traffic

control, aviation management, and unmanned aircraft systems.

UND also hosts a program in conjunction with the NDSU Extension Service focusing on 4H. "We've been doing that for the last 20 years," said UND Aerospace Assistant Dean Ken Polovitz. "We invite 4H students to UND for an aerospace weekend where we do extensive tours, aircraft displays and let them fly simulators."

— *Juan Miguel Pedraza*



## NSERC APPOINTS NEW DIRECTOR

*UND-NASA partnership brings scientist Melissa Yang aboard*

UND recently appointed Melissa Yang as program director of the National Suborbital Education and Research Center (NSERC). NSERC is hosted at UND Aerospace in the Department of Earth System Science & Policy.

As program director, Yang is responsible for science operations support for various NASA airborne research platforms, including the DC-8, P-3 and C-130. She also serves as an interface to the scientific community.

Yang received her Ph.D. in analytical/atmospheric chemistry from the University of California, Irvine in 2009. She was previously a research physical scientist at NASA Langley Research Center, and deputy project manager for the Radiation Budget Instrument (RBI).

Yang was also Instrument Principal Investigator for the AVOCET (Atmospheric Vertical Observations of CO<sub>2</sub> in the Earth's Troposphere) and PAMCO<sub>2</sub> (Picarro Atmospheric Measurements of CO<sub>2</sub>) instruments. Much of her research focuses on the study of the carbon cycle, source sink attribution, and use of in situ data for satellite validation.

### ABOUT NSERC

NSERC is the product of a cooperative agreement between NASA and the University of North Dakota. It's part of NASA's Ames Cooperative for Research in Earth Science and Technology (ARC-CREST). NSERC supports science mission operations and aircraft deployments for Earth science research campaigns conducted by the NASA Airborne Science Program. This includes the DC-8, which flies with a UND logo on its fuselage as part of the UND NSERC program, and several other aircraft and unmanned aircraft systems.

NSERC is also responsible for education and outreach activities for the Airborne Science Program, including organization and operation of the Student Airborne Research Program (SARP), a college-level summer internship that provides hands-on research experience in airborne science using NASA's flying laboratories.

— *Juan Miguel Pedraza*

# WILD BLUE YONDER

*UND alum, award-winning aerobatic pilot  
Cameron Jaxheimer invited into the big league*

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Cameron Jaxheimer beside the Extra 300L, used for advanced aerobatic competition.

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Whatever you think it is, don't call it "stunt flying."

For pilots like recent University of North Dakota aviation alumnus Cameron Jaxheimer, "stunt" doesn't begin to tell the story of athleticism, skill, grit and finesse that it takes to competently handle an aerobatic aircraft. Following a signally successful competition earlier this year, Jaxheimer was named to the eight-member USA Advanced Aerobatic Team. In August of 2016, he'll be competing as a member of that team at the World Advanced Aerobatic Championship in Poland.

"I got the travel bug first," said Jaxheimer, who grew up in the Seattle area. "Then I took a scenic flight in my home town when I was 12 years old." Jaxheimer then attended an aviation-focused public school in Seattle—Raisbeck Aviation High School—where UND is listed among the school's 'Partners in Learning'.

Migrating to UND, Jaxheimer majored in Commercial Aviation while competing with the UND Flying Team and the UND Aerobatics Team—both consistently rated among the best in the nation. "I had faced the fear of aerobatic flying, tried it out a couple of times—I was real nervous—then I got used to it, then I got enthusiastic for it," said Jaxheimer, who finished his degree in just three years. Jaxheimer racked up an impressive set of credentials and awards flying the

University's two American Champion Super Decathlons before moving into an Extra 300L, owned by a private donor and managed by a team of UND aerobatic pilots.

## BIG LEAP

Part of Jaxheimer's training has included attending the Tutima Academy of Aviation Safety, an internationally known aerobatic school.

"That was a big leap because I didn't have much experience," said Jaxheimer, who is trim and fit like most aerobatic aviators and rather quiet. "But the networking opportunities there were terrific. I met some very good coaches. I eventually met Sean Tucker, a U.S. National Advanced Aerobatic Champion and internationally known airshow pilot, and I went to work there for a summer. I was on the airshow crew for Sean, including ferrying his ride-plane around, and then I did maintenance jobs on the ground during the air shows."

In 2012, one of his Tutima instructors, Ben Freelove, asked Jaxheimer if he wanted to compete. "I did my first competition down there," Jaxheimer said.



Brenda Risky

## PHYSICALLY FIT

Mike Lents, the UND Aerobatic Team's coach and chief aerobatic instructor at UND, said Jaxheimer possesses the self-confidence and disciplined approach to flying that are vital indicators of success in aerobatics.

"As a coach I'm looking for someone who is flying the airplane naturally, who can wrap their mind around some of the more three-dimensional aspects of aerobatic performance," said Lents, himself an award-winning aviator and elite instructor. "It takes someone with drive who wants to fly precisely and take it to the next level as opposed to just enjoying it as a recreational sport."

Jaxheimer emphasizes the athletic nature of competitive aerobatic flying. "I started going to the gym six times weekly, basically for weight training, which helps muscle growth and helps develop your bones and tendons to handle the stress (of aerobatic flying)," he said. "Cardio helps as well with breathing properly and having more g-force tolerance. It helps you squeeze the blood back to your brain so that you

don't pass out when doing high-g maneuvers."

## CAREER CHOICE

"Obviously, aerobatic flying is a lot fun," Jaxheimer said. "At the same time, aerobatics is all about flying safely and improving safety. As a pilot, you're usually flying straight and level, but someday if you find yourself upside down—how do you recover?"

Aerobatic training, Lents said, develops skills that any pilot can safely use. "Always being in a different attitude—being able to control your airplane through 360 degrees of roll and pitch—improves your safety in case you should ever end up in an unusual attitude."

Jaxheimer says he's heading into aerobatics as a profession. "It's on a trial basis right now," he said. Behind him is his aviation degree from UND, world renowned for its astonishing safety record and walls full of competition awards. "We've a got a great supportive culture here to do aerobatics."

— *Juan Miguel Pedraza*





## AEROBATIC TEAM, 8-TIME NATIONAL CHAMPIONS



The University of North Dakota Aerobatic Team flew past the competition in the most recent contest.

The International Aerobatic Club (IAC) announced the 2015 season results for the Eagle Collegiate National Championship Award Program: the University of North Dakota ranks No. 1, for the eighth consecutive year. Earning this honor for UND were the following student competitors, in alphabetical order:

**Alex Hunt**, Hallock, Minn., Aviation Management  
**Cameron Jaxheimer**, Kingston, Wash., Commercial Aviation  
**Estin Johnson**, Seattle, Wash., Commercial Aviation  
**Patrick Mills**, Houston, Texas, Commercial Aviation  
**John Perillo**, Hudson, Wis., Commercial Aviation & Unmanned Aircraft Systems  
**Deven Romain**, Glenburn, Maine, Commercial Aviation & Unmanned Aircraft Systems  
**Christiaan Schrimpf**, Grants Pass, Ore., Commercial Aviation with a Safety Specialization  
**Michael VanderMeulen**, Fargo, N.D., Commercial Aviation  
**Alex Volberding**, Crystal, Minn., Unmanned Aircraft Systems

The Team's highest scoring competitors were Patrick Mills, Christiaan Schrimpf and John Perillo. Patrick Mills took the honor of top Collegiate Individual Competitor in Sportsman or higher flight category.

Cameron Jaxheimer, flying in the Advanced Category, qualified at the U.S. National Aerobatic Championships to represent the United States with the U.S. Advanced Aerobatic Team at the 2016 World Advanced Aerobatic Championships to be held in Radom, Poland.

The Aerobatic Team was led by Head Coach Michael Lents, Coaches Greg Gilmer and Jonathan Sepulveda, Safety Pilot and Instructor Bryan Strathdee, and Faculty Advisor Joe Vacek.

The team started competing last year on June 26th at the IAC Open West Championship in Seward, Nebraska. Christiaan Schrimpf and Michael VanderMeulen placed first and second in the Primary Category with John Perillo and Estin Johnson narrowly missing the podium. Patrick Mills and Coach Sepulveda placed 2nd and 3rd in Sportsman with Alexander Volberding also competing in the category. Cameron Jaxheimer and Coach Lents competed in Advanced



with Lents earning a flight medal during the Free program.

Cameron Jaxheimer placed 2nd in Advanced at the Michigan Aerobatic Open, held July 11th and 12th. Patrick Mills and Cameron also independently attended the Rocky Mountain Cam-Am in Cut Bank, Mont., on July 18th and 19th. Patrick placed first in Sportsman and Cameron placed second in Advanced.

The team next attended the Doug Yost Challenge in Spencer, Iowa on August 14th. Christiaan Schrimpf, John Perillo, Deven Romain, Michael VanderMeulen, Estin Johnson and Alex Hunt flew Primary sweeping up the top six spots, respectively. Coach Sepulveda, Patrick Mills, Alexander Volberding and Coach Strathdee placed second through fifth, respectively, in the Sportsman Category. Coach Lents and Cameron Jaxheimer placed first and second in the Advanced Category.

UND finished the season at the IAC U.S. Nationals in Dennison, Texas. Christiaan Schrimpf narrowly beat John Perillo for first place overall in the Primary Category, each earning flight medals for placing in the top two spots in all three flights. Estin Johnson and Michael VanderMeulen

finished fourth and fifth overall. Estin earned a third place flight medal for his third flight. Patrick Mills and Bryan Strathdee both competed in the Sportsman Category. Greg Gilmer earned a second place flight medal for the Unknown Sequence in Intermediate. Cameron Jaxheimer and Michael Lents both competed in the Advanced Category with Cameron qualifying for the U.S. Advanced Aerobatic Team.

— *Mike Lents, UND CFI and Aerobatic Team coach*

## UND, TOKAI UNIVERSITY CELEBRATE 10 YEARS OF PARTNERSHIP

UND Aerospace and Tokai University recently celebrated 10 years of partnership.

“It’s a testament to our core values and the excellent education we provide students from all over the world,” said Odegard School Dean Bruce Smith, who was a special guest at Tokai for the anniversary. The initial agreement was signed in 2005, with a four-year extension in 2012. More than 200 Tokai students have come to UND, with about 160 now flying for airlines.

Tokai students attend UND for 15 months to become commercial pilots.



When they leave UND Aerospace, they have both Federal Aviation Administration and Japan Civil Aviation Bureau credentials.

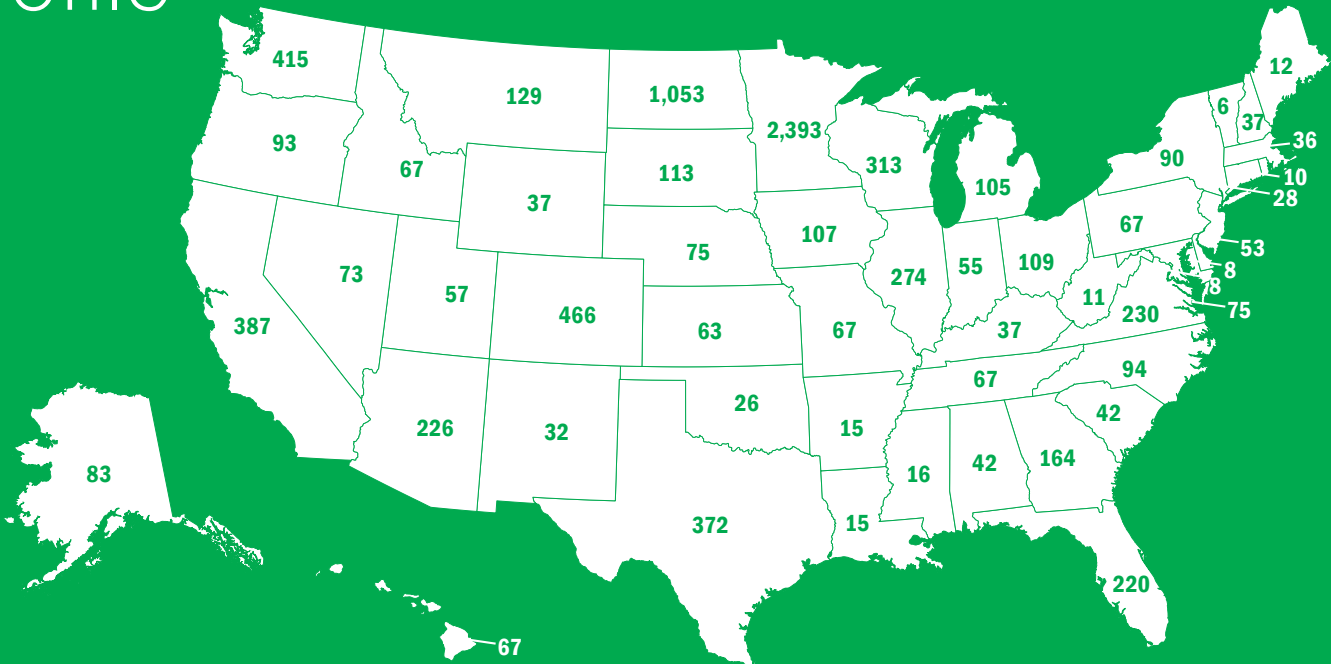
— Juan Miguel Pedraza

Past graduates of the program with Dean Bruce Smith, Dick Schultz and Debbie Kobersinski.

## Alumni Profile

### Find Odegard School alumni across the globe

NUMBERS REPRESENT ALUMNI LIVING IN EACH STATE



### International Alumni

Argentina, Australia, Belgium, Bolivia, Canada, China, Croatia, Estonia, Germany, Greece, Guam, Hong Kong, Iceland, India, Italy, Japan, Mexico, Nigeria, Norway, Pakistan, Papua New Guinea, Puerto Rico, Russian Federation, Saudi Arabia, Singapore, St Lucia, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Kingdom, Virgin Islands



# RESEARCH JET COMPLETES SUCCESSFUL STORM RESEARCH MISSIONS



Jackie Lorentz

UND's Citation II research aircraft, dubbed "UND Cloud One", flew several successful missions last year, including voyages to Florida and the Pacific Northwest.

In Florida, the storm cloud sampling was done concurrently with one of the most advanced radar systems in the world, the U.S. Navy's Mid-Course Doppler Radar. "We studied thunderstorm anvils, sampling the clouds up to an altitude of 40,000 ft.," said Mike Poellot, Chester Fritz Distinguished Professor and chair of Atmospheric Sciences. Poellot is the overall principle investigator (PI) for research jet projects.

David Delene, a faculty member and computer modeling expert in Atmospheric Sciences, says flying is the

easier part; data analysis is where the hard work begins.

"We analyze the airborne observations, reviewing hundreds of gigabytes of images and videos, and terabytes of radar data," said Delene, who manages the aircraft's data acquisition instruments and computers during the mission. "The unique data set produced by the field project provides exceptional opportunities for UND students to contribute to our understanding of thunderstorms, weather and climate."

The jet was also in the Seattle area late last year on a student-friendly NASA research mission titled OLYMPEx, part of a \$750,000 grant. The goal: validate NASA satellite radar data in a new system for tracking precipitation globally. Mike Poellot was the PI and

flew in the six-week mission's first two weeks. Two additional Atmospheric Sciences graduate students participated as flight engineers for that project: Joe O'Brien, M.S. student from South Amboy, N.J., and Andrea Neumann, Ph.D. candidate from Annandale, Minn.

The data set that UND Cloud One helped to create in its latest storm research mission used some of the most advanced instrumentation in the world. "UND students thus have the unique opportunity to work with leading scientists to advance our understanding of cloud physics and make new discoveries," Poellot said.

— *Juan Miguel Pedraza*



# COMP SCI STUDENTS DESIGN WEB PROJECT FOR NASA'S JET PROPULSION LAB

With a world-class pool of technical and scientific talent, NASA's Jet Propulsion Laboratory (JPL) is a leading government R&D institution, famous for leading several vital space exploration missions, including the Mariner and Viking space probes.

minority in the computer science world.

For Bob Olmsted, a Computer Science major from Chanhassen, Minn., the possibility of working on a NASA-affiliated project drew him into the class.



"I've done a bit of everything on this project," Olmsted said. "For example, I've written some of the interface to the database and I've written some of the pieces that take information from the database and put them out so that they can be displayed in a way that is ordered and easy to look at."

Caleb Meyer, a Computer Science major from Hope, N.D., says his interest in Computer Science started with a Science Fair project in high school. "I had a good run with Science Fair, and I went to the

This group of elite researchers recently tasked a UND Aerospace Computer Science class to design a new web site dedicated to helping JPL maximize its resources.

"This web site design project—done entirely by students—was part of the fall 2015 CSci 297 class," said UND Computer Science Ph.D. candidate Jeremy Straub, the course instructor. "They're making a web site that's going to be used at JPL to facilitate collaboration. It's kind of like Kickstarter for JPL. The students get the experience in project design and JPL gets the web site that they want."

For Mekinock, N.D. native Daisy Mae Hensrud, one of the team members working on the JPL web site, it's a significant project on her path to becoming a professional computer scientist. Hensrud worked on the "front end," the part that users see on their computer screens.

"This project confirmed my desire to go into an IT career," said Hensrud, who acknowledges that women still are the

international level, and then had the privilege of going to the White House Science Fair," said Meyer, who's headed for a co-op at Rockwell Collins in Cedar Rapids, Iowa. "This JPL project is great because it taught us all about working in teams."

"That's a key part of the class," said Straub. "Most programming is done in small teams that are part of larger teams, like we did here. This JPL project really prepares our students to work in this type of environment. We're helping students with the transition from learning the theory and gaining the knowledge to actually being able to do something with that knowledge."

— *Juan Miguel Pedraza*



Jackie Lorentz

## CLIMATE & CULTURE FESTIVAL

The UND Aerospace Department of Earth System Science & Policy hosted a well-attended Climate & Culture Festival, featuring a keynote address by famed Polar explorer Will Steger. The event was organized by ESSP faculty member and Fulbright scholar Rebecca Romsdahl. The four-day event showcased how culture and climate are linked in a variety of artistic and research endeavors across campus and into the greater Grand Forks community. The Festival paralleled the international climate conference in Paris Nov. 30-Dec. 11.

— *Juan Miguel Pedraza*

## Space Studies | News



Travis Nelson, a graduate student in the Department of Space Studies, adjusts the sleeves on the NDX-1 spacesuit while Space Studies faculty member Pablo De León, left, adjusts the neck ring.  
Credits: NASA/Dmitri Gerondidakis

## NASA AWARDS THREE GRANTS TOTALING \$2.16 MILLION

The UND Aerospace Department of Space Studies was awarded three grants totaling \$2.16 million by the National Aeronautics and Space Administration (NASA), augmented by North Dakota state match funding of \$1 million.

**NASA Experimental Program to Stimulate Competitive Research (EPSCoR):** \$750,000 grant, 2015-2018, for the ND Multi-Purpose Research Station in support of NASA's future human missions to Mars. This grant is for research and infrastructure related to the UND Inflatable Mars Lunar Habitat.

**NASA Experimental Program to Stimulate Competitive Research (EPSCoR):** \$375,000 grant, 2015-2018, to support the expansion of NASA-relevant research infrastructure and capabilities in North Dakota.

**National Space Grant College and Fellowship Program (SPACE Grant):** \$1,030,000 training grant, 2015-2018, to support the North Dakota Space Grant Consortium.

— *Juan Miguel Pedraza*

# AEROSPACE ALUMNI ADVISORY BOARD UPDATE



The UND Aerospace Alumni Advisory Board (AAAB) wrapped up a very busy and exciting year when we held our Fall meeting during Homecoming in Grand Forks last October. The Board members are both proud and amazed whenever we return and see all that is taking place at the Odegard School. Both the faculty and students are involved in work and research that is not only expanding the frontiers across all of aerospace but helping to make our already very safe system even safer. These are very exciting times for not only those on campus but for the alumni that are out in the industry worldwide.

I am honored to have been elected as President of the UND AAAB for the next two years and we have a very strong executive committee coming on board: Jennifer Storm (Vice President), Joel Aiken (Secretary/Treasurer) and Matt Kalouner (Past President). Jennifer has been an active alumnus since graduating in '02, is currently Chief Operating Officer at Assessment Compliance Group and is a leader in not only the corporate aviation community but her local community. Joel is a captain at United Airlines and has been very active in all aspects of the AAAB and helping on campus since graduating. Matt will continue to lend his expertise as both a pilot with Alaska Airlines and several years of experience serving on the AAAB. I will round out the executive committee with a background in aviation safety and accident investigation. Currently I serve as an Operations Research Analyst with the Federal Aviation Administration in Washington D.C.

We will continue to build on the great work of the AAAB under the past leadership of Matt, Rich Baker, Kurt Jensen and Brian Gora, just to name a few. We will work to further grow our scholarship program to help our undergraduate students become the next generation of leaders in aerospace. We will continue to bring current practices and information from the industry back to the faculty and students to keep UND Aerospace on the leading edge. We will continue to build the AAAB to be evangelists for UND Aerospace and the work they do. With all they do, it isn't a hard message to deliver.

We will continue the successful practice of holding the spring meeting in a location outside of Grand Forks that allows the faculty and AAAB members to interface with industry and government organizations. The spring 2016 meeting will be held in Dallas, TX, hosted by Southwest Airlines. We will have the opportunity to meet with Southwest, training providers and corporate flight departments in the Dallas area. Stay tuned to social media for an announcement of the time and location for a UND Aerospace alumni reception in Dallas during the spring meeting. We look forward to providing you with a recap of our "off-site" meeting in a future Aerocom article.

Thank you from the entire AAAB for the opportunity to serve both you, the alumni, and the faculty and students at UND Aerospace. This will be a very exciting term for all of us.



**Corey Stephens '99**  
President, AAAB  
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Operations Research Analyst, FAA

Corey Stephens **99**  
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Blumhorst, Jonathan **11**  
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Strack, Brian **01**  
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Tomlin, Nicholas **94**  
Toivola, Kevin **01**  
Troxel, Brad **06**  
Webster, Doug **83**  
Wright, Corey **05**



# EVENTS

MARCH - JULY 2016

## March 10-12

Nashville, TN  
Women in Aviation  
Conference

## March 11

Nashville, TN  
UND Aviation  
Alumni & Industry  
Reception

## April 14

Dallas, TX  
UND Aerospace  
Alumni Reception

## April 15

Dallas, TX  
UND Aerospace  
Alumni Advisory  
Board Meeting

## April 28-29

Grand Forks, ND  
SAMA Career Fair

## April 30 - May 1

Grand Forks, ND  
UND Aviation  
Family Weekend

## April 30 - May 1

Anchorage, AK  
Great Alaska  
Aviation Gathering

## July 25-31

Oshkosh, WI  
EAA Airventure

## July 27

Oshkosh, WI  
UND Aerospace  
Alumni & Industry  
Reception



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**John D. Odegard**  
**School of Aerospace Sciences**  
Attention: Josh Christianson  
3980 Campus Rd, Stop 9007  
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1980s

Can you name the two gentleman below working on this aircraft from the 1980s?

Left to right: Frank Argenziano, Bill Little & Dan Kasowski!

# ARCHIVES

